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EFFICIENCY FOR EFFICIENCY'S SAKE¹

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There is something very alluring to certain classes of minds—including my own—in the phrase “an exact science.” It seems to have about it a superior virtue, a halo, an odor of sanctity which puts the poor shambling inexact sciences to shame. Consequently we hear a great deal nowadays about the making of this, that, or the other subject of study into an exact science. In every field of knowledge—in economics, in psychology, in linguistics, in sociology, in ethics, in short in all of the looser-woven “ics” and “ologies”—somebody is setting the screws a little harder. In every one of these departments of instruction some stern, wall-eyed thinker, rising stiffly and frowning upon his shamefaced colleagues, has announced that in *his* book or brochure or syllabus the subject has at last been elevated to the status of mathematics, physics, chemistry, and astronomy. Nay, even in such irresponsible, Ariel-like subjects as literature, music, and the arts generally, the same motive is seen at work. Within the past few years a book by the brother of an eminent scientist, himself a scientist of some note, professes to have raised to the dignity of an exact science the whole subject of poetry.

In a movement of so sweeping a character it was inevitable that education should sooner or later come in for its share of attention. That time seems now to have arrived. Indeed, if one may judge from the number of books and articles on the subject that have appeared within the past three years, we are now on the crest of the wave. The special form which the rage for exactness has taken in the field of education is, I need hardly say, the same as in the field of industry, namely, the testing and measurement of efficiency. By prolonged observation of classroom procedure, by the application

¹ Presidential address given before the North Central Association of Colleges and Secondary Schools, Chicago, March 20, 1914.

to pupils of ingenious tests, by minute analysis of data, it is sought to determine with mathematical precision the net effectiveness of the teaching process. The results, when they are arrived at, are expressed in the form of scales, diagrams, curves, and tables of percentages.

As a rough indication of the growth of interest in this subject of educational efficiency one may cite the articles listed under this head in the *Reader's Guide to Periodical Literature*. In the years from 1905 to 1910 but two articles appeared; in 1911 seven articles; in 1912 seven articles; in 1913 twenty articles. A selection from some of the more recent entries will show the direction and progress of the movement. Thus: "Measuring Educational Processes through Educational Results"; "Tests of School Efficiency"; "Means of Measuring Educational Products"; "By What Standards or Tests Shall the Efficiency of a School or System of Schools Be Measured?"; "Is Scientific Accuracy Possible in the Measurement of the Efficiency of Instruction?"; "Need of Standards for Measuring Progress and Results"; "Reliability of Single Measurements with Standard Tests"; "Testing of Children for Mental Efficiency." Perhaps nothing, however, will convey a better idea of the seriousness with which the idea is accepted and the lengths to which it is proposed to carry its application than a recent address by President Lowell, of Harvard University, before the New England Association of Colleges and Preparatory Schools. The address was entitled "Measurements of Efficiency in College." Says President Lowell:

I take it that the development of intellectual capacity by training of the mind is a part—if you will, the highest part—of biological science, and as such it is subject to the biological laws of variation. In his inquiry into human faculty, Galton studied the variation in the marks of the wranglers at Cambridge University, and found that they all conformed to his general law of the probable curve.

If the biological principles apply to education, the biological laws of variation ought to be true, and hence, in any large bodies of pupils, the curve of probability ought to be significant. If in two large courses the marking varies greatly, there must be some reason for it, and the most common reason is that one is easier than the other, or the standard of marking is more lenient. . . . The curve of probability is not an absolute measure, but it is an indication. It ought to put one on one's guard. It is a danger signal; as the lawyers say, it gives notice.

To those who are interested in measurements of efficiency it is a source of great gratification that the Department of Economics at Harvard has requested the Department of Education to investigate the efficiency of its teaching. As yet, it is too early to speak of the methods that are being employed . . . but it is fair to say that they promise much. At present, it is enough that by cordial co-operation a step has been taken which bids fair to bring education nearer to the goal of an exact science.

A movement which has gathered as much headway as these facts indicate is likely to go much farther. The passion for testing efficiency will not slack until every element and factor of the teaching process has been submitted to rigorous quantitative measurements. Still further, the results of these measurements when they have been ascertained are certain to be used in determining the value of the teacher's work and ultimately in defining his function and fashioning his ideals. That the results of all this inquiry, as of scientific investigation in general, will in the long run be beneficial, I have little doubt; but the run may be very long, and in the meantime, especially while enthusiasm for the new method is high, there is a serious danger against which teachers need to be on their guard. It is the danger that under the stimulus of this fascinating idea the investigator, in his rage for measuring everything in sight, may overlook, and induce the teacher to overlook, the true end and nature of education. It is not inconceivable that the teacher, dazed by the brilliancy of the new conception, may be brought to think of himself only as a factor in the production of curves of efficiency and of his pupils only as rated units in the determination of percentages of distribution. In other words, there is a real danger that efficiency, having become a fetish, may be pursued purely for efficiency's sake.

Should this unfortunate state of things come about—and I am bound to say that the signs of its approach are to my mind unmistakable—the peril would, as usually in educational matters, be of a twofold nature: first, as it would affect the individual teacher, and second, as it would affect the status of the profession of which he is a constituent part. I will speak briefly of each of these aspects.

As regards the teacher, the danger is that he may be judged, and may be led to judge himself, by a false or inadequate standard.

Scientific measurements are of a quantitative kind. In the nature of things they cannot be otherwise. The standards of measurement are consequently also quantitative. The results of the applications of these standards are quantitative and can be expressed in mathematical or other abstract symbols. But the most efficient things in teaching are not, in my opinion, susceptible of adequate quantitative measurement. They are such things as personality, sympathy, sincerity, enthusiasm, intuition of character, taste, judgment, love of truth, tact. These things are qualities, not quantities, and any judgment of them, to be adequate, must be made in terms of quality. To be sure, in the case of any quality, we can indicate the more or less of it in mathematical symbols, but how thin and ghostlike are such records compared with the living reality. Consider, for example, teachers' recommendations. It is one thing to look over the markings of an applicant for a position as teacher; it is a startlingly different thing to be confronted by the person himself. Everyone who is called upon frequently to recommend candidates for positions must have received letters like the following: "I am satisfied with the candidate's record, but please tell me confidentially and in a word whether he is the man I want." And no curve or formula will serve as the answer to that agonized appeal.

Though the scientific investigator is careful to assert that he does not pretend to measure quality, yet by his preoccupation with quantitative matters, by the emphasis he throws upon mathematical ratings, he gives the impression that the quantitative aspect is not only all-important but all-sufficient.

There is a delightful story about the children of Darwin going to visit a neighbor's child at a time when Darwin was wholly absorbed in the study of barnacles. The Darwin children explored the neighbor's house with great curiosity, going upstairs and down, inspecting the stables, tool shed, and pigeon house with growing bewilderment. When everything had been seen, the Darwin children could repress themselves no longer. One of them turned to the neighbor's child and asked, "Where in the world then does your father do his barnacles?" I fancy the time is not far off when the older generation of teachers will hear from the devotees of efficiency

a similar question, "Where in the world then do you do your curves?"

Nor is President Lowell's reference to the curve of probability a mere *brutum fulmen*. In a number of universities, so I have been told, it is the custom to plot once or twice a year the curve of every teacher's markings in examinations, and in case any curve varies from the so-called normal curve, as determined by the researches of Galton and Karl Pearson, to send it with a note of warning to the instructor concerned.

Lest I may seem to have exaggerated out of all reason the influence of the efficiency curve upon the minds of college teachers, I will give two instances which I can personally vouch for. In one case an instructor deliberately added the name of a fairly good student to the list of failures just in order to bring up what I am tempted to call his batting average, that is, to fill out the normal 10 per cent of failures. In the other case an instructor announced at the beginning of the semester that owing to the presence of several mature professional students who had already been over the subject, the grades of all the rest would be materially reduced.

But, as I have said, the peril involves not only the individual teacher but the status of the whole teaching profession. The tendency of much of the present-day testing for efficiency seems to me to be steadily in a downward direction. If it goes on to its natural terminus it will inevitably shift the status of the teacher's life-work from that of a liberal or learned profession to that of a business or even a trade.

We speak of professions as learned, but the difference between a profession and a trade lies after all not so much in the relative degree of learning required in the two cases as in the spirit in which the career is followed. A very learned man may make a trade of law or medicine or even of the ministry, if he pursues it by routine or for the money there is in it. On the other hand, men of small intellectual endowment and little schooling may by their devotion to ideal ends elevate a so-called trade to the dignity of a profession. If education is a liberal profession, it is so because those who practice it are raised above the common level by ideals of service and love of humanity and by an unquenchable desire to pass on to

others the knowledge that they have found so precious and so comforting.

I do not know how the profession of teaching presents itself to those who are before me, but to me it has always seemed very closely akin to the ministry. Between teaching and preaching there is an affinity which rests on no merely superficial resemblance. I have always thought of the teacher as being called to his pursuit by inward promptings, not by caprice or merely material considerations. I have thought of him as entering upon his work with a broken and a contrite heart, searching the inmost folds of character and conscience to see if he were worthy of the responsibility and equal to the task. I have thought of him as pursuing his work with the devotion and the fervor of one who has consecrated himself to a high calling. Still further, if the work of the teacher is to be tested for its efficiency, I have thought of this test as being the same as that of the ministry: Is he a savior of souls? Is he a fountain of light and hope and courage? Does the spark of intelligence in the young minds before him as he addresses them shoot up into sudden flame? Do those who have sat under his ministration look back to their contacts with him with gratitude as occasions when the finest and best in them was aroused and stirred to activity? Has he been able to inspire them with the love of truth, with the ambition of being wise and good, with the growing power to enjoy what is pure and noble and finely wrought?

I have been told that it was once the custom at Oberlin College—it may be yet for all I know—for the instructors to open every recitation with prayer. For my part I could not do that. Wild horses could not drag me to a recitation room for such a purpose. The act of prayer thus made compulsory would, I am sure, in my case quickly degenerate into ritual, into formula, into hocus-pocus. Nevertheless there is something about the idea that appeals to me strongly. I believe in the spirit of the practice. I believe, that is, that the schoolroom ought to be a kind of shrine. It was so to me when I was a child. It was, in the religious sense of the word, an awful place, and none of the trivial happenings of the daily routine could rob it of its significance. So it should be for the teacher—a holy place of which he is the high priest. The teacher who, when

he enters his classroom, does not feel at least momentarily something of the devotion of the minister of God, who does not then and at intervals thereafter, as he conducts his work, feel within him some stirrings of the divine spirit, is not a teacher. He is a curve. He should go into some pursuit where curves are true expressions of efficiency.

To carry out the suggested analogy and press my point home, let us imagine the pastor of a church summoned before his vestry on charges of inefficiency. The following dialogue might ensue:

Chairman: The members of the vestry have been looking over your annual report, Mr. Primrose, and, to speak frankly, they are not entirely satisfied with the results.

Pastor: I have done my best, gentlemen.

Chairman: No doubt, no doubt. We give you full credit, say $2\frac{1}{2}$ per cent, for your good intentions. But you must remember we are now living, not in the days of the early Christians, but in the twentieth century. This is an age when these mere subjective measurements are discredited. There must be no fumbling, no guesswork. Our official inspector has plotted your curve of efficiency and I am bound to say that it departs seriously from the norm, that it is, in technical language, badly skewed. It is true the number of church-members has increased in about the right proportion. The percentage of backsliders, though possibly below the normal, is not disturbing. But these are negligible. Let us come now to the important things. How many souls have been saved during the year?

Pastor: My report says two hundred and fifty.

Chairman: Two hundred and fifty, 25 per cent of the entire church membership! Oh, my dear sir! This will never do! Karl Pearson allows but 10 per cent. Are you aware, sir, that a comparative statement shows that you are saving more souls than any other clergyman in the city?

Pastor: I had thought of the saving of souls as my life-work. It is my hope, my comfort, my inspiration.

Chairman: Yes, yes. We have heard all that before, and I am sure it does you credit. But 25 per cent! Impossible! Contrary to all scientific principles. You must understand once for all that this church is run for efficiency. The saving of souls is a secondary consideration. Now let us look at the other end of the curve. How many do you suppose that you have sent to—well, not to mince matters—have sent to hell?

Pastor: As few as possible.

Chairman: So I should judge. One-half of one per cent. Really, this is shocking. My dear Mr. Primrose, if this church is to maintain its standards of efficiency, 10 per cent—at least 10 per cent—must be consigned every year to eternal damnation.

Now I do not mean by this bit of dialogue to imply that teachers shall make their courses easier, or adopt a different marking system, or let pupils pass when they should not pass, or anything of the kind. My sole point is that to lead teachers and administrative officers to believe that arithmetical data or quantitative measurement of any kind can serve as a test of the teacher's efficiency as a teacher will ultimately result in degrading the profession.

As an example of the misleading sort of testing and its influence on the profession of teaching, I can cite nothing more apt than Mr. Cooke's elaborate *Report on Academic and Industrial Efficiency* prepared for the Carnegie Foundation and published as one of their bulletin numbers. Interesting as this report is and valuable from the purely scientific point of view, I do not hesitate to say that it is for the teaching profession a mischievous document. I do not see how any young teacher with his ideals and standards yet to form can read it without danger of infinite harm, nor how any old teacher can read it without a sense of shame and degradation. I have thought sometimes that the only rational way in which to regard it was as a huge joke—a sort of Gulliverian travesty of the whole efficiency idea.

Whatever may be said for and against it, the testing industry in education is likely to go on with unabated vigor. Like it or not, we must put up with it and turn it to the best uses we can. Since that is so, I would make a suggestion. It is that if such tests of efficiency are good for pupils and teachers, they are equally good for their superior officers. Why withhold this precious boon from principals, from superintendents, from college presidents? It would be most interesting, for example, to inspect the curves of superintendents of city schools as plotted by the members of the school board. Or, to take a pertinent instance from recent history, why should not a certain trustee of a certain state university, which shall be nameless, lay upon the desk of the president a carefully plotted curve of the president's successes and failures for the past year from the viewpoint of the trustee? We can all imagine, I think, the expression which would flit over the president's face as he examined his curve. That expression would be worth preserving photographically. I suspect that it would not be the expression

of a broken and a contrite spirit, but rather, in the words of the psalter, the expression of a stony heart that is insensible of the burden of sin, stubborn, rebellious, impenitent, and incorrigible.

But we must not stop here. We must go on to test school boards and boards of trustees, bodies which present curious variations of efficiency. We must test the people who elect these boards, and, ultimately, we must test the testers themselves, who are not free, I suspect, from the defects of our common mortality. And thus that happy time will arrive when, everybody being engaged in testing everybody else, we shall be like those fortunate inhabitants of the Scilly islands who are said to make a comfortable living merely by taking in one another's washing.

In concluding let me guard against a misapprehension. It may seem to some that what I have said has shown a hostility to the whole efficiency movement. I should be sorry to give that impression, for I have a great deal of sympathy with the movement and always read with interest whatever bears upon it. As applied to industrial organizations, to administrative work, to material productions, to anything in short which can be adequately represented in quantitative terms, whether in education or out of it, the precise measurement of efficiency is one of the great inventions of our age. It is only where spiritual factors and ideal values are involved that I have my doubts. In this region precise measurements are difficult and quantitative standards a delusion and sometimes an impertinence.

For my part, if I wished to correct the aberration of a young instructor, I should not send him a curve of probability. I should rather send him, as at once a corrective and a stimulus, Plato's beautiful vision of the ideal education:

Then will our youth dwell in a land of health, amid fair sights and sounds, and receive the good in everything; and beauty, the effluence of fair works, shall flow into the eye and ear like a health-giving breeze from a purer region and insensibly draw the soul from earliest years into likeness and sympathy with the beauty of reason.